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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/544,253	08/02/2005	Yoshiaki Ohbayashi	0388-051646	1352

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THE WEBB LAW FIRM, P.C.
700 KOPPERS BUILDING
436 SEVENTH AVENUE
PITTSBURGH, PA 15219

EXAMINER	
LE, HUYEN D	

ART UNIT	PAPER NUMBER
2615	

MAIL DATE	DELIVERY MODE
09/21/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/544,253	OHBAYASHI ET AL.	
	Examiner	Art Unit	
	HUYEN D. LE	2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 July 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *10-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *10-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. Claim 11 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is not clear what (100) of the silicon substrate of (100) orientation is referred to.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 10-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bernstein (U.S. patent 5,452,268).

Regarding claim 10, Bernstein'268 teaches an acoustic transducer that comprises a substrate (the silicon substrate 18), a back electrode (12) forming perforations (13) therein corresponding to acoustic holes and a diaphragm (16). Bernstein further shows a multilayered assembly (figure 1) that is mounted on the substrate (18).

As shown in figure 1, the sacrificial layer (silicon oxide layer 14) is etched relative to the multilayered assembly that is formed of the diaphragm, the sacrificial layer and the back electrode, thereby defining a void area between the diaphragm and the back electrode, with the sacrificial layer remaining at outer peripheral portions of the void area.

Bernstein does not specifically teach the diaphragm (16), the sacrificial layer (14) and the back electrode (12) that are superposed in series in vapor deposition technique as claimed. However, providing a vapor deposition technique for the constructing or forming the layers in the condenser microphone is very well known in the art.

Therefore, it would have been obvious to one skilled in the art to provide the diaphragm (16), the sacrificial layer (14) and the back electrode (12) that are superimposed in series in any technique such as vapor deposition technique for better forming and constructing the layers in the condenser microphone.

Berstein teaches the back electrode (12) is formed by polycrystal silicon (col. 2, lines 57-62, col. 3, lines 25-30), and lacks the teaching of a thickness as claimed. However, Bernstein does not limit to any thickness for the back electrode.

Therefore, it would have been obvious to one skilled in the art to provide any thickness for the back electrode (12) of Bernstein such as the thickness of 5 microns to 20 microns depending on the applications and the desired frequency characteristics.

Regarding claim 11, Bernstein does not specifically teach that the substrate (18) is a monocrystal silicon substrate. However, it is known in the art to provide monocrystal silicon for the substrate in the capacitive acoustic transducers.

Therefore, it would have been obvious to one skilled in the art to provide monocrystal silicon for the substrate (18) for an alternate choice.

Regarding claim 12, Bernstein teaches an impurity diffusion treatment that is executed on the diaphragm (col. 4, lines 42-48).

Regarding claims 13-15, Bernstein teaches the substrate (18) that comprises a support substrate having a silicon substrate and consisting of the single crystal silicon on insulator (SOI) wafer as claimed (figure 1). The SOI wafer has an active layer used as a diaphragm (16) of monocrystal silicon (col. 2, lines 57-62, col. 3, lines 25-30).

Bernstein does not specifically teach a thickness as claimed in claim 15. However, Bernstein does not limit to any thickness for the diaphragm.

Therefore, it would have been obvious to one skilled in the art to provide any thickness for the diaphragm (16) of Bernstein such as the thickness of 0.5 to 5 microns depending on the applications and the desired frequency characteristics.

Regarding claims 16-17, Bernstein shows the SOI structure that includes a silicon oxide film (14, col. 3, lines 63-64) formed on a monocrystal silicon substrate (18), and a polycrystal silicon film (16, col. 3, lines 25-30 and col. 5, lines 1-7) formed on the silicon oxide film (14).

Regarding claims 18, Bernstein teaches the diaphragm (16) that is formed of polycrystal silicon (col. 2, lines 57-62, col. 3, lines 25-30 and col. 5, lines 1-7).

Bernstein does not specifically teach a thickness as claimed in claim 18. However, Bernstein does not limit to any thickness for the diaphragm.

Therefore, it would have been obvious to one skilled in the art to provide any thickness for the diaphragm (16) of Bernstein such as the thickness of 0.5 to 5 microns depending on the applications and the desired frequency characteristics.

Response to Arguments

4. Applicant's arguments filed 07/02/07 have been fully considered but they are not persuasive.

Responding to the arguments about the sacrificial layer and the back electrode that are formed as a multilayered assembly by a vapor deposition technique, the Applicant should note that Bernstein does teach a silicon oxide film or layer (14) that remains at outer peripheral portions of the void area as claimed (figures 1 and 3). Further, providing the vapor deposition technique for forming and bonding the layers in the condenser microphone is known in the art. Therefore, it would have been obvious to one skilled in the art to provide the diaphragm (16), the sacrificial layer (14) and the back electrode (12) that are superimposed in series in any well-known technique such as a vapor deposition technique for better forming and constructing the layers in the condenser microphone.

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to HUYEN D. LE whose telephone number is (571) 272-7502. The examiner can normally be reached on 9:30AM-6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, SINH TRAN can be reached on (571) 272-7564. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HL
September 15, 2007

HUYEN LE
PRIMARY EXAMINER